What is claimed is:

1. A method of forming a chemically selective sorbent film , comprising:

placing on a substrate a composition containing a first precursor molecule containing at least two silicon hydride groups, a second precursor molecule containing at least two carbon-carbon multiple bonds, and a photoactivatable catalyst;

exposing at least a portion of said composition to light of a type and in an amount sufficient to cause hydrosilylation reactions to occur in the composition,

whereby the composition will become a chemically selective sorbent film.

2. The method of claim 1 where the catalyst is selected from the group consisting of platinum(II) bis(beta-diketonates).

3. The method of claim 2 where the catalyst is platinum (II) bis(acetylacetonate)

4. The method of claim 1 wherein the second precursor molecule is selected from the group consisting of monomers, oligomers, polymers, and crosslinkers.

5. The method of claim 4 where the second precursor molecule is a polymer.

Sub A1 6. The method of claim 5 where the second precursor molecule is a polymer with vinyl groups pendant to the polymer chain.

7. The method of claim 6 where the polymer is a polysiloxane with vinyl groups pendant to the polymer chain.

8. The method of claim 7 where the polymer is a polysiloxane selected from the group OV225, OV17, OV275, and polydimethylsiloxane with vinyl substituents.

Sub B1

9. The method of claim 5 where the second precursor molecule is a polymer with a carbon-carbon multiple bond on each terminus.

10. The method of claim 9 where the polymer is a polysiloxane with vinyl groups on each terminus.

11. The method of claim 9 where the polymer is polydimethylsiloxane with vinyl groups on each terminus.

Sub A2

12. The method of claim 5 where the polymer is a poly(carbosiloxane) with a carbon-carbon multiple bond on each terminus.

13. The method of claim 12 where the carbosiloxane polymer is selected from the group BSP3, UR3, CSPH, and CSME, where each was prepared to have carbon-carbon multiple bonds on each terminus.

14. The method of claim 4 where the second precursor molecule is a monomer.

15. The method of claim 14 where the second precursor molecule is selected from the group containing molecules with two vinylsiloxy groups, molecules with two vinylsilane groups,

molecules with two vinyldimethylsiloxy groups, and molecules with two vinylmethylphenylsiloxy groups.

16. The method of claim 14 where the second precursor molecule is an organic molecule with two allyl groups.

17. The method of claim 16 where the second precursor molecule is 2, 2-bis (3-allyl-4-hydroxyphenyl)hexafluoropropane. see p30

18. The method of claim 4 where the second precursor molecule is a crosslinker containing more than two carbon-carbon multiple bonds.

19. The method of claim 18 where the crosslinker is selected from the group containing molecules with more then two vinylsiloxy groups, molecules with more then two vinylsilane groups, molecules with more then two vinyldimethylsiloxy groups, and molecules with more then two vinylmethylphenylsiloxy groups.

20. The method of claim 1 wherein the first precursor molecule is selected from the group consisting of monomers, oligomers, polymers, and crosslinkers.

21. The method of claim 20 where the first precursor molecule is a polymer.

22. The method of claim 21 where the first precursor molecule is a polymer with silicon hydride groups along the polymer chain.

23. The method of claim 22 where the polymer is a polysiloxane with silicon hydride groups along the polymer chain.

24. The method of claim 23 where the polymer is a polysiloxane selected from the group if poly(hydromethyl)(dimethyl)siloxane copolymers and poly(hydromethyl)siloxane.

25. The method of claim 21 where the first precursor molecule is a polymer with a silicon hydride group on each terminus.

26. The method of claim 25 where the polymer is a polysiloxane with a silicon hydride group on each terminus.

27. The method of claim 26 where the polymer is polydimethylsiloxane with a silicon hydride group on each terminus.

28. The method of claim 21 where the polymer is a poly(carbosiloxane) with a silicon hydride group on each terminus.

29. The method of claim 28 where the polymer is selected from the group BSP3, UR3, CSPH, and CSME, where each was prepared to have a silicon hydride group on each terminus.

30. The method of claim 20 where the first precursor molecule is an oligomer.

31. The method of claim 30 where the first precursor molecule is an oligomer with a silicon hydride group on each terminus.

32. The method of claim 31 where the oligomer is an oligosiloxane with a silicon hydride group on each terminus.

33. The method of claim 32 where the oligomer is an alpha,omega -dihydrorganosiloxane.

34. The method of claim 33 where the oligomer is an alpha, omego-dihydrooligo(dimethyl)siloxane.

35. The method of claim 30 where the oligomer is a carbosiloxane oligomer with a silicon hydride group on each terminus.

36. The method of claim 35 where the oligomer is a carbosiloxane oligomer prepared from 2, 2-bis (3-allyl-4-hydroxyphenyl)hexafluoropropane and an excess of an alpha, omego-dihydrooligo(dimethyl)siloxane.

37. The method of claim 36 where the oligomer is a carbosiloxane oligomer, DN96, prepared from 2, 2-bis (3-allyl-4-hydroxyphenyl)hexafluoropropane and an excess of an alpha, omego-dihydro(hexamethyltrisiloxane.

38. The method of claim 20 where the first precursor molecule is a monomer with two Si-H bonds.

39. The method of claim 38 where the monomer is diphenylsilane.

40. The method of claim 20 where the first precursor molecule is a crosslinker with more than two Si-H bonds.

41. The method of claim 40 where the first precursor molecule is selected from the group 1,3-diphenyl-1,1,3,3-tetrakis(dimethylsiloxy)disiloxane, phenyl-tris(dimethylsiloxy)silane, and methyl-tris(dimethylsiloxy)silane.

42. The method of claim 1 where the hydrosilylation reactions cause polymerization to occur.

43. The method of claim 1 where the hydrosilylation reactions cause crosslinking to occur.

44. The method of claim 1 where the hydrosilylation reactions cause polymerization and crosslinking to occur.

45. The method of claim 1 where the composition contains effective amounts of hydromethyldimethylsiloxane (25% hydromethyl groups), vinyl-terminated polydimethylsiloxane, and Pt(II) bis(acetylacetonate).

46. A sorbent film that will selectively absorb chemical species when exposed to such chemical species, prepared by the method of claim 1.

47. A chemical sensor prepared by the method of claim 1.

48. A method of forming a chemically selective sorbent film , comprising:

providing a substrate;

cleaning the substrate;

reacting a coupling agent with the surface of said substrate that appends to the surface reactive groups that can participate in hydrosilylation reactions;

placing on a substrate a composition containing a first precursor molecule containing at least two silicon hydride groups, a second precursor molecule containing at least two carbon-carbon multiple bonds, and a photoactivatable catalyst;

exposing at least a portion of said composition to light of a type and in an amount sufficient to cause hydrosilylation reactions to occur in the composition, whereby the composition will become a chemically selective sorbent film.

49. The method of claim 48 wherein the coupling agent is selected from the group that appends silicon hydride or carbon-carbon multiple bonds to the surface.

50. The method of claim 49 whereing the coupling agent is selected from the group trialkoxysilane, trimethoxysilane, triethoxysilane, trichlorosilane, trialkoxyvinylsilane, trimethoxyvinylsilane, triethoxyvinylsilane, and trichlorovinylsilane, alkoxydimethylsilanes, chlorodimethylsilanes, alkoxydimethylvinylsilanes, and chlorodimethylvinylsilanes.

~~51. The method of claim 48 where the catalyst is selected from the group consisting of platinum(II) bis(beta-diketonates).~~

~~52. The method of claim 51 where the catalyst is platinum (II) bis(acetylacetonate).~~

53. The method of claim 48 wherein the second precursor molecule is selected from the group consisting of monomers, oligomers, polymers, and crosslinkers.

54. The method of claim 53 where the second precursor molecule is a polymer.

55. The method of claim 54 where the second precursor molecule is a polymer with vinyl groups pendant to the polymer chain.

56. The method of claim 55 where the polymer is a polysiloxane with vinyl groups pendant to the polymer chain.

57. The method of claim 56 where the polymer is a polysiloxane selected from the group OV225, OV17, OV275, and polydimethylsiloxane with vinyl substituents.

58. The method of claim 54 where the second precursor molecule is a polymer with a carbon-carbon multiple bond on each terminus.

59. The method of claim 58 where the polymer is a polysiloxane with vinyl groups on each terminus.

60. The method of claim 59 where the polymer is polydimethylsiloxane with vinyl groups on each terminus.

61. The method of claim 54 where the polymer is a poly(carbosiloxane) with a carbon-carbon multiple bond on each terminus.

62. The method of claim 61 where the carbosiloxane polymer is selected from the group BSP3, UR3, CSPH, and CSME, where each was prepared to have carbon-carbon multiple bonds on each terminus.

63. The method of claim 53 where the second precursor molecule is a monomer.

64. The method of claim 63 where the second precursor molecule is selected from the group containing molecules with two vinylsiloxy groups, molecules with two vinylsilane groups, molecules with two vinyldimethylsiloxy groups, and molecules with two vinylmethylphenylsiloxy groups.

65. The method of claim 63 where the second precursor molecule is an organic molecule with two allyl groups.

66. The method of claim 65 where the second precursor molecule is 2, 2-bis (3-allyl-4-hydroxyphenyl)hexafluoropropane.

67. The method of claim 53 where the second precursor molecule is a crosslinker containing more than two carbon-carbon multiple bonds.

68. The method of claim 67 where the crosslinker is selected from the group containing molecules with more then two vinylsiloxy groups, molecules with more then two vinylsilane groups, molecules with more then two vinyldimethylsiloxy groups, and molecules with more then two vinylmethylphenylsiloxy groups.

69. The method of claim 48 wherein the first precursor molecule is selected from the group consisting of monomers, oligomers, polymers, and crosslinkers.

70. The method of claim 69 where the first precursor molecule is a polymer.

71. The method of claim 70 where the first precursor molecule is a polymer with silicon hydride groups along the polymer chain.

72. The method of claim 71 where the polymer is a polysiloxane with silicon hydride groups along the polymer chain.

73. The method of claim 72 where the polymer is a polysiloxane selected from the group if poly(hydromethyl)(dimethyl)siloxane copolymers and poly(hydromethyl)siloxane.

74. The method of claim 70 where the first precursor molecule is a polymer with a silicon hydride group on each terminus.

75. The method of claim 74 where the polymer is a polysiloxane with a silicon hydride group on each terminus.

76. The method of claim 75 where the polymer is polydimethylsiloxane with a silicon hydride group on each terminus.

77. The method of claim 74 where the polymer is a poly(carbosiloxane) with a silicon hydride group on each terminus.

78. The method of claim 77 where the polymer is selected from the group BSP3, UR3, CSPH, and CSME, where each was prepared to have a silicon hydride group on each terminus.

79. The method of claim 69 where the first precursor molecule is an oligomer.

80. The method of claim 79 where the first precursor molecule is an oligomer with a silicon hydride group on each terminus.

81. The method of claim 80 where the oligomer is an oligosiloxane with a silicon hydride group on each terminus.

82. The method of claim 81 where the oligomer is an alpha,omega -dihydrorganosiloxane.

83. The method of claim 82 where the oligomer is an alpha, omego-dihydrooligo(dimethyl)siloxane.

84. The method of claim 79 where the oligomer is a carbosiloxane oligomer with a silicon hydride group on each terminus.

85. The method of claim 84 where the oligomer is a carbosiloxane oligomer prepared from 2, 2-bis (3-allyl-4-hydroxyphenyl)hexafluoropropane and an excess of an alpha, omego-dihydrooligo(dimethyl)siloxane.

86. The method of claim 85 where the oligomer is a carbosiloxane oligomer, DN96, prepared from 2, 2-bis (3-

allyl-4-hydroxyphenyl)hexafluoropropane and an excess of an alpha, omego-dihydro(hexamethyltrisiloxane.

87. The method of claim 69 where the first precursor molecule is a monomer with two Si-H bonds.

88. The method of claim 87 where the monomer is diphenylsilane.

89. The method of claim 69 where the first precursor molecule is a crosslinker with more than two Si-H bonds.

90. The method of claim 89 where the first precursor molecule is selected from the group 1,3-diphenyl-1,1,3,3-tetrakis(dimethylsiloxy)disiloxane, phenyl-tris(dimethylsiloxy)silane, and methyl-tris(dimethylsiloxy)silane.

91. The method of claim 48 where the hydrosilylation reactions cause polymerization to occur.

92. The method of claim 48 where the hydrosilylation reactions cause crosslinking to occur.

93. The method of claim 48 where the hydrosilylation reactions cause grafting to the surface to occur.

94. The method of claim 48 where the hydrosilylation reactions cause crosslinking and grafting to the surface to occur.

95. The method of claim 48 where the hydrosilylation reactions cause polymerization and grafting to the surface to occur.

96. The method of claim 48 where the hydrosilylation reactions cause polymerization and crosslinking and graftinng to occur.

97. The method of claim 48 where the composition contains effective amounts of hydromethyldimethylsiloxane (25% hydromethyl groups), vinyl-terminated polydimethylsiloxane, and Pt(II) bis(acetylacetonate).

98. The method of claim 48 where the composition contains effective amounts of diphenyltetrakis(dimethylsiloxy)disiloxane, OV17, and Pt(II) bis(acetylacetonate).

99. The method of claim 48 where the composition contains effective amounts of diphenyltetrakis(dimethylsiloxy)disiloxane, OV225, and Pt(II) bis(acetylacetonate).

100. The method of claim 48 where the composition contains effective amounts of diphenyltetrakis(dimethylsiloxy)disiloxane, DN96, 2, 2-bis (3-allyl-4-hydroxyphenyl)hexafluoropropane and Pt(II) bis(acetylacetonate).

101. A sorbent film that will selectively absorb chemical species when exposed to such chemical species, prepared by the method of claim 48.

102. A chemical sensor prepared by the method of claim 48.

103. A method of forming a chemically selective sorbent film, comprising:

placing on a substrate a composition containing a first precursor molecule containing at least two silicon hydride groups, a second precursor molecule containing at least two carbon-carbon multiple bonds, and a photoactivatable catalyst;

exposing the composition to a predetermined pattern of light of a type and in an amount sufficient to cause hydrosilylation reactions to occur in the composition;

leaving an unexposed region;

allowing sufficient time for hydrosilylation reactions to occur within exposed regions;

and using a solvent to remove the unexposed composition from the substrate, leaving the exposed composition on the substrate; whereby the composition will become a chemically selective sorbent film.

104. The method of claim 103 where the catalyst is selected from the group consisting of platinum(II) bis(beta-diketonates).

105. The method of claim 104 where the catalyst is platinum (II) bis(acetylacetonate)

106. The method of claim 103 wherein the second precursor molecule is selected from the group consisting of monomers, oligomers, polymers, and crosslinkers.

107. The method of claim 106 where the second precursor molecule is a polymer.

108. The method of claim 107 where the second precursor molecule is a polymer with vinyl groups pendant to the polymer chain.

109. The method of claim 108 where the polymer is a polysiloxane with vinyl groups pendant to the polymer chain.

110. The method of claim 109 where the polymer is a polysiloxane selected from the group OV225, OV17, OV275, and polydimethylsiloxane with vinyl substituents.

111. The method of claim 107 where the second precursor molecule is a polymer with a carbon-carbon multiple bond on each terminus.

112. The method of claim 111 where the polymer is a polysiloxane with vinyl groups on each terminus.

113. The method of claim 112 where the polymer is polydimethylsiloxane with vinyl groups on each terminus.

114. The method of claim 107 where the polymer is a poly(carbosiloxane) with a carbon-carbon multiple bond on each terminus.

115. The method of claim 114 where the carbosiloxane polymer is selected from the group BSP3, UR3, CSPH, and CSME, where each was prepared to have carbon-carbon multiple bonds on each terminus.

116. The method of claim 106 where the second precursor molecule is a monomer.

117. The method of claim 116 where the second precursor molecule is selected from the group containing molecules with two vinylsiloxy groups, molecules with two vinylsilane groups, molecules with two vinyldimethylsiloxy groups, and molecules with two vinylmethylphenylsiloxy groups.

118. The method of claim 116 where the second precursor molecule is an organic molecule with two allyl groups.

119. The method of claim 118 where the second precursor molecule is 2, 2-bis (3-allyl-4-hydroxyphenyl)hexafluoropropane.

120. The method of claim 106 where the second precursor molecule is a crosslinker containing more than two carbon-carbon multiple bonds.

121. The method of claim 120 where the crosslinker is selected from the group containing molecules with more then two vinylsiloxy groups, molecules with more then two vinylsilane groups, molecules with more then two vinyldimethylsiloxy groups, and molecules with more then two vinylmethylphenylsiloxy groups.

122. The method of claim 103 wherein the first precursor molecule is selected from the group consisting of monomers, oligomers, polymers, and crosslinkers.

123. The method of claim 122 where the first precursor molecule is a polymer

124. The method of claim 123 where the first precursor molecule is a polymer with silicon hydride groups along the polymer chain.

125. The method of claim 124 where the polymer is a polysiloxane with silicon hydride groups along the polymer chain.

126. The method of claim 125 where the polymer is a polysiloxane selected from the group if poly(hydromethyl)(dimethyl)siloxane copolymers and poly(hydromethyl)siloxane.

127. The method of claim 123 where the first precursor molecule is a polymer with a silicon hydride group on each terminus.

128. The method of claim 127 where the polymer is a polysiloxane with a silicon hydride group on each terminus.

129. The method of claim 128 where the polymer is polydimethylsiloxane with a silicon hydride group on each terminus.

130. The method of claim 123 where the polymer is a poly(carbosiloxane) with a silicon hydride group on each terminus.

131. The method of claim 130 where the polymer is selected from the group BSP3, UR3, CSPH, and CSME, where each was prepared to have a silicon hydride group on each terminus.

132. The method of claim 122 where the first precursor molecule is an oligomer.

133. The method of claim 132 where the first precursor molecule is an oligomer with a silicon hydride group on each terminus.

134. The method of claim 133 where the oligomer is an oligosiloxane with a silicon hydride group on each terminus.

135. The method of claim 134 where the oligomer is an alpha,omega -dihydrorganosiloxane.

136. The method of claim 135 where the oligomer is an alpha, omego-dihydrooligo(dimethyl)siloxane.

137. The method of claim ~~132 where~~ the oligomer is a carbosiloxane oligomer with a silicon hydride group on each terminus.

138. The method of claim 137 where the oligomer is a carbosiloxane oligomer prepared from 2, 2-bis (3-allyl-4-hydroxyphenyl)hexafluoropropane and an excess of an alpha, omego-dihydrooligo(dimethyl)siloxane.

139. The method of claim 138 where the oligomer is a carbosiloxane oligomer, DN96, prepared from 2, 2-bis (3-

allyl-4-hydroxyphenyl)hexafluoropropane and an excess of an alpha, omego-dihydro(hexamethyltrisiloxane.

140. The method of claim 122 where the first precursor molecule is a monomer with two Si-H bonds.

141. The method of claim 140 where the monomer is diphenylsilane.

142. The method of claim 122 where the first precursor molecule is a crosslinker with more than two Si-H bonds.

143. The method of claim 142 where the first precursor molecule is selected from the group 1,3-diphenyl-1,1,3,3-tetrakis(dimethylsiloxy)disiloxane, phenyl-tris(dimethylsiloxy)silane, and methyl-tris(dimethylsiloxy)silane.

144. The method of claim 103 where the hydrosilylation reactions cause polymerization to occur.

145. The method of claim 103 where the hydrosilylation reactions cause crosslinking to occur.

146. The method of claim 103 where the hydrosilylation reactions cause polymerization and crosslinking to occur.

146. The method of claim 103 where the composition contains effective amounts of hydromethyldimethylsiloxane (25% hydromethyl groups), vinyl-terminated polydimethylsiloxane, and Pt(II) bis(acetylacetonate).

147. A sorbent film that will selectively absorb chemical species when exposed to such chemical species, prepared by the method of claim 103.

148. A chemical sensor prepared by the method of claim 103.

149. A method of forming a chemically selective sorbent film, comprising:

providing a substrate;

cleaning the substrate;

reacting a coupling agent with the surface of said substrate that appends to the surface reactive groups that can participate in hydrosilylation reactions;

placing on a substrate a composition containing a first precursor molecule containing at least two silicon hydride groups, a second precursor molecule containing at least two carbon-carbon multiple bonds, and a photoactivatable catalyst;

exposing the composition to a predetermined pattern of light of a type and in an amount sufficient to cause hydrosilylation reactions to occur in the composition;

leaving an unexposed region;

allowing sufficient time for hydrosilylation reactions to occur within exposed regions;

and using a solvent to remove the unexposed composition from the substrate, leaving the exposed composition on the substrate; whereby the composition will become a chemically selective sorbent film.

150. The method of claim 149 wherein the coupling agent is selected from the group that appends silicon hydride or carbon-carbon multiple bonds to the surface.

151. The method of claim 150 whereing the coupling agent is selected from the group trialkoxysilane, trimethoxysilane, triethoxysilane, trichlorosilane, trialkoxyvinylsilane, trimethoxyvinylsilane, triethoxyvinylsilane, and trichlorovinylsilane, alkoxydimethylsilanes, and alkoxydimethylvinylsilanes.

~~152. The method of claim 149 where the catalyst is selected from the group consisting of platinum(II) bis(beta-diketonates).~~

Sub B2 ~~153. The method of claim 152 where the catalyst is platinum (II) bis(acetylacetonate)~~

154. The method of claim 149 wherein the second precursor molecule is selected from the group consisting of monomers, oligomers, polymers, and crosslinkers.

~~155. The method of claim 154 where the second precursor molecule is a polymer.~~

~~156. The method of claim 155 where the second precursor molecule is a polymer with vinyl groups pendant to the polymer chain.~~

~~157. The method of claim 156 where the polymer is a polysiloxane with vinyl groups pendant to the polymer chain.~~

~~158. The method of claim 157 where the polymer is a polysiloxane selected from the group OV225, OV17, OV275, and polydimethylsiloxane with vinyl substituents.~~

159. The method of claim 155 where the second precursor molecule is a polymer with a carbon-carbon multiple bond on each terminus.

160. The method of claim 159 where the polymer is a polysiloxane with vinyl groups on each terminus.

161. The method of claim 160 where the polymer is polydimethylsiloxane with vinyl groups on each terminus.

162. The method of claim 155 where the polymer is a poly(carbosiloxane) with a carbon-carbon multiple bond on each terminus.

163. The method of claim 162 where the carbosiloxane polymer is selected from the group BSP3, UR3, CSPH, and CSME, where each was prepared to have carbon-carbon multiple bonds on each terminus.

164. The method of claim 154 where the second precursor molecule is a monomer.

165. The method of claim 164 where the second precursor molecule is selected from the group containing molecules with two vinylsiloxy groups, molecules with two vinylsilane groups, molecules with two vinyldimethylsiloxy groups, and molecules with two vinylmethylphenylsiloxy groups.

166. The method of claim 164 where the second precursor molecule is an organic molecule with two allyl groups.

167. The method of claim 166 where the second precursor molecule is 2, 2-bis (3-allyl-4-hydroxyphenyl)hexafluoropropane.

168. The method of claim 154 where the second precursor molecule is a crosslinker containing more than two carbon-carbon multiple bonds.

169. The method of claim 168 where the crosslinker is selected from the group containing molecules with more then two vinylsiloxy groups, molecules with more then two vinylsilane groups, molecules with more then two vinyldimethylsiloxy groups, and molecules with more then two vinylmethylphenylsiloxy groups.

170. The method of claim 149 wherein the first precursor molecule is selected from the group consisting of monomers, oligomers, polymers, and crosslinkers.

171. The method of claim 170 where the first precursor molecule is a polymer.

172. The method of claim 171 where the first precursor molecule is a polymer with silicon hydride groups along the polymer chain.

173. The method of claim 172 where the polymer is a polysiloxane with silicon hydride groups along the polymer chain.

174. The method of claim 173 where the polymer is a polysiloxane selected from the group if

poly(hydromethyl)(dimethyl)siloxane copolymers and poly(hydromethyl)siloxane.

175. The method of claim 171 where the first precursor molecule is a polymer with a silicon hydride group on each terminus.

176. The method of claim 175 where the polymer is a polysiloxane with a silicon hydride group on each terminus.

177. The method of claim 176 where the polymer is polydimethylsiloxane with a silicon hydride group on each terminus.

178. The method of claim 175 where the polymer is a poly(carbosiloxane) with a silicon hydride group on each terminus.

179. The method of claim 178 where the polymer is selected from the group BSP3, UR3, CSPH, and CSME, where each was prepared to have a silicon hydride group on each terminus.

180. The method of claim 170 where the first precursor molecule is an oligomer.

181. The method of claim 180 where the first precursor molecule is an oligomer with a silicon hydride group on each terminus.

182. The method of claim 181 where the oligomer is an oligosiloxane with a silicon hydride group on each terminus.

183. The method of claim 182 where the oligomer is an alpha,omega -dihydrorganosiloxane.

184. The method of claim 183 where the oligomer is an alpha, omego-dihydrooligo(dimethyl)siloxane.

185. The method of claim 180 where the oligomer is a carbosiloxane oligomer with a silicon hydride group on each terminus.

186. The method of claim 185 where the oligomer is a carbosiloxane oligomer prepared from 2, 2-bis (3-allyl-4-hydroxyphenyl)hexafluoropropane and an excess of an alpha, omego-dihydrooligo(dimethyl)siloxane.

187. The method of claim 186 where the oligomer is a carbosiloxane oligomer, DN96, prepared from 2, 2-bis (3-allyl-4-hydroxyphenyl)hexafluoropropane and an excess of an alpha, omego-dihydro(hexamethyltrisiloxane.

188. The method of claim 170 where the first precursor molecule is a monomer with two Si-H bonds.

189. The method of claim 188 where the monomer is diphenylsilane.

190. The method of claim 170 where the first precursor molecule is a crosslinker with more than two Si-H bonds.

191. The method of claim 190 where the first precursor molecule is selected from the group 1,3-diphenyl-1,1,3,3-tetrakis(dimethylsiloxy)disiloxane, phenyl-

tris(dimethylsiloxy)silane, and methyl-tris(dimethylsiloxy)silane.

192. The method of claim 149 where the hydrosilylation reactions cause polymerization to occur.

193. The method of claim 149 where the hydrosilylation reactions cause crosslinking to occur.

194. The method of claim 149 where the hydrosilylation reactions cause grafting to the surface to occur.

195. The method of claim 149 where the hydrosilylation reactions cause crosslinking and grafting to the surface to occur.

196. The method of claim 149 where the hydrosilylation reactions cause polymerization and grafting to the surface to occur.

197. The method of claim 149 where the hydrosilylation reactions cause polymerization and crosslinking and graftinng to occur.

198. The method of claim 149 where the composition contains effective amounts of hydromethyldimethylsiloxane (25% hydromethyl groups), vinyl-terminated polydimethylsiloxane, and Pt(II) bis(acetylacetonate).

199. The method of claim 149 where the composition contains effective amounts of

diphenyltetrakis(dimethylsiloxy)disiloxane, OV17, and Pt(II) bis(acetylacetonate).

200. The method of claim 149 where the composition contains effective amounts of diphenyltetrakis(dimethylsiloxy)disiloxane, OV225, and Pt(II) bis(acetylacetonate).

201. The method of claim 149 where the composition contains effective amounts of diphenyltetrakis(dimethylsiloxy)disiloxane, DN96, 2, 2-bis (3-allyl-4-hydroxyphenyl)hexafluoropropane and Pt(II) bis(acetylacetonate).

202. A sorbent film that will selectively absorb chemical species when exposed to such chemical species, prepared by the method of claim 149.

203 ~~204~~. A chemical sensor prepared by the method of claim 149.

204 ~~205~~. A method of forming several individual domains of chemically selective sorbent films on a single substrate comprising:

providing a substrate;

cleaning the substrate;

reacting a coupling agent with the surface of said substrate that appends to the surface reactive groups that can participate in hydrosilylation reactions;

placing on a substrate a first composition containing a first precursor molecule containing at least two silicon hydride groups, a second precursor molecule containing at least two carbon-carbon multiple bonds, and a photoactivatable catalyst;

exposing the composition to a predetermined pattern of light of a type and in an amount sufficient to cause hydrosilylation reactions to occur in the composition;

leaving an unexposed region;

allowing sufficient time for hydrosilylation reactions to occur within exposed regions;

and using a solvent to remove the unexposed composition from the substrate, leaving the exposed composition on the substrate;

placing on the substrate a second composition containing a first precursor molecule containing at least two silicon hydride groups, a second precursor molecule containing at least two carbon-carbon multiple bonds, and a photoactivatable catalyst;

exposing the composition to a predetermined pattern of light of a type and in an amount sufficient to cause hydrosilylation reactions to occur in the second composition at a different location on the substrate from the first composition;

leaving an unexposed region;

allowing sufficient time for hydrosilylation reactions to occur within exposed regions;

and using a solvent to remove the unexposed composition from the substrate, leaving the exposed composition on the substrate;

repeating the process with additional new compositions at additional different locations;

whereby the substrate contains separate domains of different chemically selective sorbent films.

addB3